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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,256	10/27/2003	Jan Mink	15436.247.31.1	2694
22913	7590	09/08/2005	EXAMINER	
WORKMAN NYDEGGER (F/K/A WORKMAN NYDEGGER & SEELEY) 60 EAST SOUTH TEMPLE 1000 EAGLE GATE TOWER SALT LAKE CITY, UT 84111			PENG, CHARLIE YU	
			ART UNIT	PAPER NUMBER
			2883	

DATE MAILED: 09/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/694,256	Applicant(s) MINK, JAN	
	Examiner Charlie Peng	Art Unit 2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 and 34 is/are pending in the application.
 4a) Of the above claim(s) 23-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 and 34 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. §103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8 and 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,731,424 to Wu in view of U.S. Patent 4,695,858 to Takezawa et al. Wu discloses a hermetically sealed housing **210** for an electro-optic device having a substrate **214**, an electro-optic device SOA **136** mounted over the substrate, and the electro-optic device having a first port and a second port (See at least Fig. 21 and description). Wu does not disclose that the package includes a cap that forms a hermetic seal only around the electro-optic device and the cap includes a first window and a second window. Takezawa teaches an optical device comprising light receiving and light emitting elements **48, 54** on a ceramic substrate having conductive layers **24, 26, 28** hermetically sealed by two integral shells (a cap) **38, 42** each having an optical window **36, 40**, wherein the windows are optically coupled to the light receiving and emitting elements. (See at least Fig. 12 and description) It would have been obvious to one of ordinary skill in the art to modify Wu to use the shell forming a hermetic seal around only the electro-optic device. The motivation is that less material would be needed to construct a hermetic housing for only the electro-optic device as opposed to the entire device/substrate assembly, resulting in low-cost and smaller package.

With specific reference to claims 2, 3 and 13, Wu discloses that the housing includes a first optical fiber **132** and a second optical fiber **134** mounted over the upper surface of the substrate **214**, a first lens **170** and a second lens **172** mounted over the surface of the substrate and in optical communication with the first optical fiber and the second optical fiber, respectively, and a housing surrounding the substrate. (See at least Figs. 21 and 22 and description)

With specific reference to claim 5, Wu and Takezawa disclose the housing for an electro-optic device including the cap that forms the hermetic seal around the electro-optic device mounted on the substrate. Wu also discloses that the housing further includes a mounting plate **212** on the substrate. The combination of Wu and Takezawa does not specifically disclose that the cap is attached to the mounting plate. However, it is well known that the hermetic seals are typically made using a seal ring (i.e., mounting plate) to create a solderable surface. Accordingly, it would have been obvious to one of ordinary skill in the art to attach the cap to the mounting plate.

With specific reference to claim 8, Wu and Takezawa do not teach that the electro-optic device is supported by a submount on a spacer block. However, it would have been obvious to modify the combination of Wu and Takezawa so that the electro-optic device is supported by a submount on a spacer block, with the motivation being to provide proper alignment between the electro-optic device and the optical fiber.

With specific reference to claims 14, 15, and 18, Wu and Takezawa do not specifically teach that the housing comprises plastic material. It would have been obvious to one having ordinary skill in the art at the time the invention was made to

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select plastic as a hermetic housing material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416. The motivation would be that plastic is comparatively cheaper and light while having good permeability properties.

Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu in view of Takezawa as applied to claim 1 above, and further in view of U.S. Patent 6,416,238 to Gilliland et al. With specific reference to claim 9, Wu and Takezawa teach the housing for an electro-optic device including the electro-optic device supported by the submount except for metal leads. Gilliland discloses an optical device housing including a submount **40** and an optical device **80** mounted on the submount. Gilliland also discloses that the submount has metal leads **90** for providing electrical connection to the optic device (See at least Figs. 2 and 3, and column 6, lines 29-36). It would have been obvious to one of ordinary skill in the art to modify the combination of Wu and Takezawa so that the submount has metal leads in order to provide electrical connection to the electro-optic device.

With specific reference to claim 10, Wu and Takezawa teach the housing for an electro-optic device including the substrate, the electro-optic device mounted on the substrate and the cap that forms a hermetic seal around the electro-optic device, but not specifically that the substrate having a first via hole located within a portion of the substrate enclosed by the cap. Gilliland discloses that the substrate includes a first via hole **44** for making electrical contact with the electro-optic device in a first region **43** in

which the electro-optic device **70** is mounted (See at least Fig. 5., and column 5, lines 36-41). It would have been obvious to one of ordinary skill in the art to modify the combination of Wu and Takezawa to include a first via hole located within a portion of the substrate enclosed by the cap, with the motivation being to provide electrical connection to the electro-optic device.

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu in view of Takezawa as applied to claim 1 above, and further in view of U.S. PGPub. 2004/0022476 to Kirkpatrick et al. Wu and Takezawa teach the housing for an electro-optic device including the cap that forms a hermetic seal around the electro-optic device on a ceramic substrate having conductive layers. Wu and Takezawa do not specifically teach that the substrate comprises a second via hold located within a portion not enclosed by the cap. Kirkpatrick teaches a package for an electro-optic device including a substrate comprising a multi-layer ceramic substrate **320, 340, 360** including conductive layers disposed within the substrate, a plurality of vias **308**, and an electro-optic device mounted over the substrate. (See at least Figs. 5 and 7., and paragraphs [0029] and [0033]). Kirkpatrick discloses the vias disposed on different locations and different layers of the substrate, including the vias disposed away from the electro-optic component **520**. It would have been obvious to one of ordinary skill in the art to modify the combination of Wu and Takezawa to include a substrate comprising a multi-layer ceramic, a second via hole located within a portion not enclosed by the cap, and conductive plates disposed within the substrate that electrically coupling the second end of the first via hole with the second end of the second via hole. The motivation would be

to provide the required electrical connectivity and to provide an interface between optical components and electronic components to utilize the bandwidth provided by fiber optics.

Claims 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu in view of Takezawa as applied to claim 1 above, and further in view of U.S. Patent 5,848,210 to Kimura. With specific reference to claims 19-20, Wu and Takezawa teach the housing comprising the ceramic substrate. Wu also discloses that the housing includes a thermo-electric cooler **216**. Wu and Takezawa do not specifically teach that the ceramic substrate functions as a cool plate of the thermo-electric cooler and the thermo-electric cooler includes a plurality of semiconductor elements. Kimura discloses a temperature controlled optical coupling structure including an optical coupling substrate **2** functioning as a cool plate of a thermo-electric cooler (i.e., Peltier cooler) including a plurality of semiconductor elements (See at least Figs. 3 and 6, and column 4, lines 3-6 and 37-46). It would have been obvious to modify the combination of Wu and Takezawa to include a Peltier cooler using the ceramic substrate as a cool plate such as that taught by Kimura in order to reduce a size of the package.

With specific reference to claims 21-22, Wu and Takezawa teach the housing for an electro-optic device and that the housing includes a thermo-electric cooler **216**. Wu and Takezawa do not specifically disclose that the thermo-electric cooler has a cool plate and a warm plate and that the thermo-electric cooler includes a plurality of semiconductor elements. Kimura discloses a temperature controlled optical coupling structure including a thermo-electric cooler having a cool plate and a warm plate,

wherein the cool plate is in thermal contact with an optical coupling substrate and the warm plate services as a mounting plate for package, and a plurality of semiconductor elements between the cool plate and the warm plate (See at least Fig. 1., and column 3, lines 18-19 and 27-33). It would have been obvious to one of ordinary skill in the art to further modify the combination of Wu and Takezawa to include a thermo-electric cooler having a cool plate and a warm plate, wherein the cool plate is in thermal contact with an optical coupling substrate and the warm plate serves as a mounting plate for the package, and a plurality of semiconductor elements between the cool plate and the warm plate. The motivation would be to control the temperature of an electro-optic device.

Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wu in view of Takezawa as applied to claim 1 above, and further in view of U.S. Patent 6,381,066 to Korn et al. Wu and Takezawa teach the housing for an electro-optic device, except that the electro-optic device includes at least one face that is oriented non-perpendicularly with respect to at least one of input and output signal. Korn discloses a semiconductor optical amplifier system including a semiconductor optical amplifier chip **102** including at least one face that is oriented non-perpendicularly with respect to at least one of input and output signal (See at least Fig. 1B). It would have been obvious to one of ordinary skill in the art to modify the combination of Wu and Takezawa so that at least one face of the electro-optic device is oriented non-perpendicularly with respect to the input or output signals. The motivation would be to prevent the reflected light from interfering with the input or output signals.

Response to Arguments

The objection to Fig. 8 is withdrawn in light of cancellation of claim 33.


Applicant's arguments with respect to claim 1-22 and 34 have been considered but are moot in view of the new ground(s) of rejection.

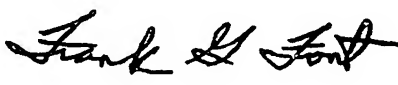
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charlie Peng whose telephone number is (571) 272-2177. The examiner can normally be reached on 9 am - 6 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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August 25, 2005


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